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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,032

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Stuart Grossart

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9133

33308

7590

10/12/2010

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EXAMINER

LOPEZ, FRANK D

ART UNIT

PAPER NUMBER

3745

MAIL DATE

DELIVERY MODE

10/12/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,032	<b>Applicant(s)</b> GROSSART, STUART	
	<b>Examiner</b> F. DANIEL LOPEZ	<b>Art Unit</b> 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 10 March 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 34-56,58-61,63 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 34-56,58-61 and 63 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 10, 2010 has been entered.

***Response to Amendment***

Applicant's arguments filed February 18, 2010, have been fully considered but they are not deemed to be persuasive.

Applicant's arguments with respect to claims 34-56, 58-61 and 63 have been considered but are deemed to be moot in view of the new grounds of rejection. The new grounds of rejection are necessitated by added limitations of maintaining pressure in the extend and retract chambers at substantially the same pressure (e.g. claim 1 line 8-9).

Applicant states that neither Hiraki et al nor Nikolaus disclose a fluid supply that maintains pressure in the extend and retract chambers at substantially the same pressure. The examiner disagrees for several reasons. Nikolaus states that for a piston having a rod to piston area ratio of 1:2, the power exercised in the direction of arrow 19 decreases by about 50% (column 4 line 45-51). The only way that the power is decreased by about 50% is if the pressures in the extend and retract chambers are about equal. Although Hiraki et al does not specifically state the above, it works in a similar way to Nikolaus, and therefore inherently has about the same pressures in the extend and retract chambers.

As discussed in the 112 rejection below, the pressures in the extend and retract chambers, when the piston is moving, will not be the same. But the system of the instant invention and the systems of Hiraki et al and Nikolaus are basically the same, and so are understood to work in the same way. If the instant invention has a particular limitation, then it is assumed that the systems of Hiraki et al and Nikolaus would have

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the same limitations, absent any reasoning why it works differently. Since Applicant has not pointed out how or why the instant invention works in a different way from the systems of Hiraki et al and Nikolaus, they are presumed to work in the same way and meet the same limitations.

For the reasons stated above, it is understood that each of Hiraki et al and Nikolaus disclose the above discussed limitation, inasmuch as it is definite.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Specification***

The disclosure is objected to because of the following: the specification states (e.g. page 4 line 10-12) "supplying fluid simultaneously to both the extend and retract chambers of a double acting differential actuators at substantially the same pressure", which appears to be wrong. The system can only supply fluid to the extend chamber or the retract chamber, at any given time, since the pumps (A, B) can supply fluid to the retract chamber while pulling fluid from the extend chamber, or supply fluid to the extend chamber while pulling fluid from the extract chamber. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

Claims 34-56, 58-61 and 63 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 34 line 7-9 "a fluid supply arranged to supply pressurized fluid to both the extend and retract chambers, to maintain fluid in the extend and retract chambers at substantially the same pressure" (claim 47 line 10-11 has a similar limitation) is confusing as to what it is supposed to mean, how it is achieved, or that it is supported by the specification. It would seem that these types of systems (i.e. having a pump moving fluid between head and rod chambers) would achieve a steady state (i.e. when

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the actuator is not moved), by having pressure in the rod and head chambers being equal (this is suggested by the prior art, e.g. Nikolaus column 4 line 45-51). This is true of systems with accumulators and with non-pressurized reservoir. In order for the actuator to move, the pump moves fluid from one chamber to the other. This movement of fluid must be accompanied by an increase in pressure in the chamber receiving the fluid and a decrease in pressure in the chamber losing the fluid. This differential pressure is what causes the actuator to move (e.g. without a differential pressure, there is no net force, with no net force there is no acceleration, hence no movement). From this discussion, it would appear that neither the accumulator nor the reversible pumps cause the extend and retract chambers to have substantially the same pressure; especially since the reversible pumps cause the extend and retract chambers to be at different pressures when activated. Instead it is the nature of the actuator with the system, which causes the pressures to be substantially the same, when in a steady state. Therefore, it is unclear what this limitation is supposed to mean or that it is supported by the specification.

Claims not specifically mentioned are indefinite, since they depend from one of the above claims.

### ***Claim Rejections - 35 USC § 102***

Claims 34-45, 47-56, 61- and 63, inasmuch as they are definite, are rejected under 35 U.S.C. § 102(b) as being anticipated by Hiraki et al. Hiraki et al discloses an actuator and method of using comprising a piston in an actuator chamber defining an extend (PL) and a retract (PS) chamber, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump (P1) arranged to reversibly transfer fluid between the extend and retract chamber and a second reversible pump (P2) arranged to transfer fluid between the extend chamber and a hydraulic accumulator (10).

Claims 34-38, 47-56, 61 and 63, inasmuch as they are definite, are rejected under 35 U.S.C. § 102(b) as being anticipated by Nikolaus. Nikolaus discloses an actuator and method of using comprising a piston (18) in an actuator chamber defining

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an extend (13) and a retract (11) chamber, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump (15) arranged to reversibly transfer fluid between the extend and retract chamber and a hydraulic accumulator (16) holding fluid transferred from the extend chamber.

### ***Claim Rejections - 35 USC § 103***

Claim 46, inasmuch as it is definite, is rejected under 35 U.S.C. § 103 as being unpatentable over Hiraki et al in view of Nikolaus. Hiraki et al discloses all of the elements of claim 46, as discussed in the above 102 rejection; but does not disclose a fluid supply in communication with the accumulator and the second pump.

Nikolaus teaches, for an actuator comprising a piston (18) in an actuator chamber defining an extend (13) and a retract (11) chamber, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump (15) arranged to reversibly transfer fluid between the extend and retract chamber and a hydraulic accumulator (16) holding fluid transferred from the extend chamber; that a fluid supply is connected to the accumulator, for the purpose of maintaining a constant pressure in the accumulator (column 3 line 63-65).

Since Hiraki et al and Nikolaus are both from the same field of endeavor, the purpose disclosed by Nikolaus would have been recognized in the pertinent art of Hiraki et al. It would have been obvious at the time the invention was made to one having ordinary skill in the art to connect a fluid supply to the accumulator of Hiraki et al, as taught by Nikolaus, for the purpose of maintaining a constant pressure in the accumulator. Since the second pump is connected to the accumulator, the supply would also be connected to the second pump.

Claims 34-45 and 47-56, 58-61 and 63, inasmuch as they are definite, are rejected under 35 U.S.C. § 103 as being unpatentable over Applicant's admitted prior art in view of Hiraki et al and MacLeod. Applicant's admitted prior art discloses a vehicle motion simulator and method of using comprising a motion platform (3, fig 1) moved by actuators (2) which are controlled by servo valves (page 1 line 25-26); but does not

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disclose that the actuator includes a piston in an actuator chamber defining an extend and a retract chamber, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump arranged to reversibly transfer fluid between the extend and retract chamber and a second reversible pump arranged to transfer fluid between the extend chamber and a hydraulic accumulator.

Hiraki et al teaches that an actuator controlled by a reversible pump and method of using can include a piston in an actuator chamber defining extend (PL) and retract (PS) chambers, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump (P1) arranged to reversibly transfer fluid between the extend and retract chamber and a second reversible pump (P2) arranged to transfer fluid between the extend chamber and a hydraulic accumulator (10).

MacLeod teaches replacing a control of an actuator (54, 56) with a servo valve (34, fig 2), with a control using a reversible pump (72, fig 3), for the purpose of eliminating complex and costly intervening valving (column 1 line 25-28), and to have a system that is accurate, relatively insensitive to leakage and reliable in use (column 1 line 32-34)

Since the actuator of Applicant's admitted prior art is controlled by a servo valve; since MacLeod teaches advantages of using a reversible pump, instead of a servo valve, to control an actuator and since Hiraki et al teaches details of a reversible pump control of an actuator; it would have been obvious at the time the invention was made to one having ordinary skill in the art to control the actuator of Applicant's admitted prior art, such that the actuator includes a piston in an actuator chamber defining an extend and a retract chamber, such that an actuator rod extends through the retract chamber; a fluid supply means, including a first reversible pump arranged to reversibly transfer fluid between the extend and retract chamber and a second reversible pump arranged to transfer fluid between the extend chamber and a hydraulic accumulator, as taught by Hiraki et al, for the purpose of eliminating complex and costly intervening valving, and to have a system that is accurate, relatively insensitive to leakage and reliable in use, as taught by MacLeod.

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The portions of the limitation concerning maintaining the fluid in the extend and retract chambers at a same pressure, which is definite, is inherent in the system formed by the combination of references.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Lopez whose telephone number is 571-272-4821. The examiner can normally be reached on Monday-Thursday from 6:00 AM -4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Look, can be reached on 571-272-4820. The fax number for this group is 571-273-8300. Any inquiry of a general nature should be directed to the Help Desk, whose telephone number is 1-800-PTO-9199.

/F. Daniel Lopez/

F. Daniel Lopez  
Primary Examiner  
Art Unit 3745  
October 7, 2010